



11/22/00

S&H Form: PTO/SB/05 (9/99)

UTILITY PATENT APPLICATION TRANSMITTAL

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Attorney Docket No. 1405.1027/JDH

First Named Inventor or Application Identifier:

Takashi SHIMADA, et al.

Express Mail Label No.

**APPLICATION ELEMENTS**

See MPEP chapter 600 concerning utility patent application contents.

**ADDRESS TO: Assistant Commissioner for Patents
Box Patent Application
Washington, DC 20231**

1. ☒ Fee Transmittal Form
2. ☒ Specification, Claims & Abstract [Total Pages: 42]
3. ☒ Drawing(s) (35 USC 113) [Total Sheets: 18]
4. ☒ Oath or Declaration [Total Pages: 3]
 - a. ☒ Newly executed (original or copy)
 - b. ☐ Copy from a prior application (37 CFR 1.63(d)) (for continuation/divisional with Box 17 completed)
 - i. ☐ **DELETION OF INVENTOR(S)**
Signed statement attached deleting inventor(s) named in the prior application, see 37 CFR 1.63(d)(2) and 1.33(b).
5. ☐ Incorporation by Reference (usable if Box 4b is checked)
The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied under Box 4b, is considered as being part of the disclosure of the accompanying application and is hereby incorporated by reference therein.
6. ☐ Microfiche Computer Program (*Appendix*)
7. ☐ Nucleotide and/or Amino Acid Sequence Submission (*if applicable, all necessary*)
 - a. ☐ Computer Readable Copy
 - b. ☐ Paper Copy (identical to computer copy)
 - c. ☐ Statement verifying identity of above copies

ACCOMPANYING APPLICATION PARTS

8. ☒ Assignment Papers (cover sheet & document(s))
9. ☐ 37 CFR 3.73(b) Statement (*when there is an assignee*) [☐ Power of Attorney
10. ☐ English Translation Document (*if applicable*)
11. ☒ Information Disclosure Statement (IDS)/PTO-1449[X] Copies of IDS Citations
12. ☒ Preliminary Amendment
13. ☒ Return Receipt Postcard (MPEP 503) (*Should be specifically itemized*)
14. ☐ Small Entity Statement(s) [☐ Statement filed in prior application, status still proper and desired.
15. ☒ Certified Copy of Priority Document(s) (*if foreign priority is claimed*)
16. ☐ Other:

17. If a CONTINUING APPLICATION, check appropriate box and supply the requisite information:[☐ Continuation [☐ Divisional [☐ Continuation-in-part (CIP) of prior application No: / **18. CORRESPONDENCE ADDRESS**

21171

PATENT TRADEMARK OFFICE

NEW APPLICATION FEE TRANSMITTAL

Attorney Docket No. 1405.1027/JDH
Application Number UNASSIGNED
Filing Date November 21, 2000

AMOUNT ENCLOSED \$ 750.00 First Named Inventor Takashi SHIMADA, et al.

FEE CALCULATION (fees effective 10/01/00)

CLAIMS	(1) FOR	(2) NUMBER FILED	(3) NUMBER EXTRA	(4) RATE	(5) CALCULATIONS
	TOTAL CLAIMS	11 - 20 =	0	X \$ 18.00 =	\$ 0.00
	INDEPENDENT CLAIMS	3 - 3 =	0	X \$ 80.00 =	0.00
	MULTIPLE DEPENDENT CLAIMS (any number; if applicable)			+ \$270.00 =	0.00
	BASIC FILING FEE				710.00
	Total of above Calculations =				\$ 710.00
	Surcharge for late filing fee, Statement or Power of Attorney (\$130.00)				+ 0.00
	Reduction by 50% for filing by small entity (37 CFR 1.9, 1.27 & 1.28).				- 0.00
	TOTAL FILING FEE =				\$ 710.00
	Surcharge for filing non-English language application (\$130.00; 37 CFR 1.52(d))				+ 0.00
	Recordation of Assignment (\$40.00; 37 CFR 1.21(h)(1))				+ 40.00
	TOTAL FEES DUE =				\$ 750.00

METHOD OF PAYMENT

- ☒ Check enclosed as payment.
☐ Charge "TOTAL FEES DUE" to the Deposit Account No., below.
☐ No payment is enclosed and no charges to the Deposit Account are authorized at this time.

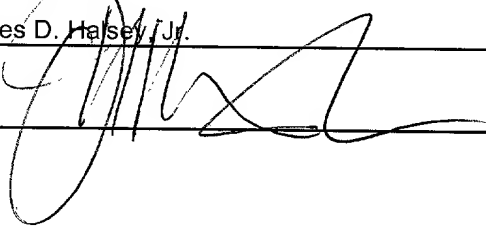
GENERAL AUTHORIZATION

- ☒ If the above-noted "AMOUNT ENCLOSED" is not correct, the Commissioner is hereby authorized to credit any overpayment or charge any additional fees necessary to:

Deposit Account No. 19-3935
Deposit Account Name STAAS & HALSEY

- ☒ The Commissioner is also authorized to credit any overpayments or charge any additional fees required under 37 CFR 1.16 (filing fees) or 37 CFR 1.17 (processing fees) during the prosecution of this application, including any related application(s) claiming benefit hereof pursuant to 35 USC § 120 (e.g., continuations/divisionals/CIPs under 37 CFR 1.53(b) and/or continuations/divisionals/CPAs under 37 CFR 1.53(b)) to maintain pendency hereof or of any such related application.

SUBMITTED BY: STAAS & HALSEY

Typed Name	James D. Halsey, Jr.	Reg. No.	22,729
Signature		Date	November 21, 2000

TITLE OF THE INVENTION

**MULTI-CHANNEL PROCESSING CONTROL DEVICE AND MULTI-CHANNEL
PROCESSING CONTROL METHOD**

BACKGROUND OF THE INVENTION

5 Technical Field

The present invention relates to a multi-channel processing control device and a multi-channel processing control method, for distributing to the most appropriate processing terminals process requests from a plurality of channels, such as process requests originating in calls from public lines or process requests generated by Internet Web servers and e-mail servers.

Description of Related Art

In call centers, the focus is on telephone-based customer response to calls coming in from public lines, and it is common for a number of operators to be standing by before telephones to respond to calls. Channels (i.e., electrical/electromagnetic communication paths) other than as calls from public lines would be those that make use of pre-existing media, such as fax transmission/reception and e-mail direct mail transmission; having operators work dual-duty at these is conceivable.

At call centers whose focus is telephone business, channel control for calls relies on PBX (Private Branch--

i.e., on-site--Exchange), and configurations utilizing ACD (Automatic Call Distributor) systems are common.

Recent advances in information technology, centering on the Internet, have opened up for customers new channels in which the World Wide Web and e-mail, for example, are used. Access from customers thus using Internet web servers and e-mail servers can be expected to increase even further with the active use of cellular phones and portable information terminals. This calls for establishing new service providing means, and in response to objectives harmonizing the channels well to realize efficient operations. Further, establishing new customer channels is foreseen for the future, which therefore calls for being able to deal flexibly with the expansion thus into new channels.

In call center systems, in order to keep up with such new channels, a conventional call center will need to made to have functions by which VoIP (Voice Over IP: Internet telephony), the Internet/World Wide Web, e-mail, and portable terminals are harmonized.

However, the characteristics of the various channels are different, and depending on the services provided, the control systems are also different.

SUMMARY OF THE INVENTION

The present invention provides a multi-channel processing control device and a multi-channel processing

control method that provide enhanced customer service and efficient operations and that have the flexibility to allow structural changes for future expansion.

The multi-channel processing control device of the present invention comprises: process request determination means for determining whether process requests from a plurality of channels are real-time process requests needing processing in real-time, or whether they are non-real-time process requests, which do not need processing in real-time; real-time processing allocation means for allocating process requests that have been determined to be said real-time process requests to processing terminals currently open among the channels that are capable of that real-time processing; non-real-time processing management means for managing process requests determined to be said non-real-time process requests, as well as their priority; and non-real-time processing allocation means for allocating to any of the processing terminals non-real-time processing managed by said non-real-time processing management means, the allocation performed with consideration given to the priority and the appropriateness of the terminal for handling the processing.

The multi-channel processing control method of the present invention comprises: a step for determining whether
25 process requests generated from a plurality of channels are

tasks or outgoing tasks depending on the current status of the processing terminals handled by the operators.

Herein, among the processing terminals handled by said each operator, at least one processing terminal is kept open
5 for real-time incoming tasks.

In addition, incoming tasks and outgoing tasks may include process requests generated from such channels as, in addition to the processing terminals handled by each said operator, a web agent that handles process requests
10 generated by Internet web servers, an e-mail agent that handles process requests generated by e-mail servers, and automatic voice response devices that automatically process incoming signals from public lines.

Further, the outgoing tasks may include pre-planned
15 non-real-time process requests that do not require real-time processing.

In addition, the present invention proposes a recording medium on which is recorded a program relating to the above multi-channel processing control. Such recording media may
20 be computer-writable floppy disks, hard disks, semiconductor memory, CD-ROMs, DVDs, and magneto-optic disks.

The present invention further proposes a transmission medium for transmitting the program relating to the above multi-channel processing control. Such transmission media
25 include telecommunications media (optical fiber, wireless

circuits, et alia) in computer networks such as LANs, the Internet or wireless telecommunications networks.

From the following detailed description in conjunction with the accompanying drawings, the foregoing and other
5 objects, features, aspects and advantages of the present invention will become readily apparent to those skilled in the art.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a simplified block diagram showing an example
10 of a configurational outline;

Fig. 2 is a control block diagram showing a interior configuration;

Fig. 3 is a flowchart of a queue registration request process;

15 Fig. 4 is a flowchart of a queue acquisition request process;

Fig. 5 is a flowchart of a queue list request process;

Fig. 6 is a flowchart of a queue change request process;

20 Fig. 7 is a flowchart of a queue deletion request process;

Fig. 8 is a flowchart of a status reporting process;

Fig. 9 is a flowchart of a delayed queue reporting process;

25 Fig. 10 is a diagram illustrating a queue data table;

Fig. 11 is a diagram illustrating a channel identification list;

Fig. 12 is a diagram illustrating a queue category list;

5 Fig. 13 is a diagram illustrating relations between queue categories and queue handling;

Fig. 14 is a diagram illustrating an allocation table;

Fig. 15 is a diagram illustrating a priority level table;

10 Fig. 16 is a diagram illustrating a task category list;

Fig. 17 is a diagram illustrating REP screen transitions; and

Fig. 18 is a block diagram showing an example of a working model.

15 DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Configurational Outline

Fig. 1 shows a configurational outline of a call center employing one embodiment of the present invention.

The call center shown here comprises a PBX (private
20 branch exchange) 11 connected to a public network, a Web server 12 connected to the Internet, and an e-mail server 13. The PBX 11 is connected to a REP 14, which is an operator terminal operated by an operator, and a VRU (voice recognition unit) 15. The Web server 12 is connected to a

Web agent system 16, and the e-mail server 13 is connected to an e-mail agent system 17.

The REP 14 and VRU 15 are devices for providing a primary portal for incoming calls from the public network to the PBX 11. The Web agent system 16 is a device for providing a primary portal when there have been requests from the Internet to the Web server 12, and the e-mail agent system 17 is a device for providing a primary portal when there have been requests from the Internet to the e-mail server 13.

The REP 14, the VRU 15, the Web agent system 16, and the e-mail agent system 17 are each connected to an MCICD (multi-channel intelligent call distributor) 18. The MCICD 18 manages all process requests generated in each channel, and forwards the process requests to the most suited processing terminal.

The MCICD 18 is notified asynchronously by the various channels of requests from customers; for those requests for which automatic response in the channel is possible, automatic response is performed. For those requests for which automatic response in the channel is not possible, the MCICD 18 is notified by that channel of a process request. In the MCICD 18, a routine is carried out that considers various parameters for the process requests from the channels, finally to forward the requests to the REP 14.

The REP 14 is constituted by an operator terminal, is capable of telephone-based call processing as well as e-mail processing, and is configured to enable executing process requests from all channels by operator operations.

5 Fig. 2 shows the configuration of the MCICD 18.

The MCICD 18 comprises a BC controller client 21 disposed on the end with the channels--the REP system 14, VRU 15, Web agent system 16 and e-mail agent system 17--and a BC controller server 31 that exercises general control
10 over the clients.

A client application 22, a queue controller DLL 24, an event transmission and reception unit 25 and associated components are disposed on the client end. The BC controller client 21 comprises the queue controller DLL 24
15 and the event transmission and reception unit 25.

The event transmission and reception unit 25, via a channel controller 23 within the client application 22, performs input and output of the current status of the clients and queue reports sent from the servers. For
20 example, the event transmission and reception unit 25 procures the current status of the clients from the channel controller 23, which it transmits to the servers. It also receives queue reports sent from the servers, which it sends to the channel controller 23.

The queue controller DLL 24 also sends to the servers requests generated by client application 22 such as queue registration requests, queue acquisition requests, queue list requests, and deletion requests.

5 The BC controller server 31 comprises: a dispatcher 32 that receives queue registration requests sent from the queue controller DLL 24 and allocates this queue data; a queue manager 33 that manages non-real-time process requests (delayed queue) that do not require processing in real-time; 10 and a BC-BUS 34 that administrates current status sent from the client end, based upon which it sends queuing reports, or events to the client end.

The dispatcher 32, when there is a queue registration request from the queue controller DLL 24, determines whether 15 this is a real-time process request requiring processing in real-time, or whether it is a non-real-time process request that does not require real-time processing. If the queue registration request is a real-time process request, a channel capable of this processing is selected, and, based 20 on the status of the clients managed by the BC-BUS 34, a queue report is sent to the event transmission and reception unit 25 of the most appropriate client. If the queue registration request is a non-real-time process request, this queue data is registered in the queue manager 33 as a 25 delayed queue.

The BC-BUS 34 administrates current status sent from the client end, and transmits, based on the current status of the clients it administrates, queuing reports sent from the dispatcher 32 to available clients.

5 The queue manager 33 registers and manages queue registration requests that the dispatcher 32 has determined to be non-real-time process requests, as well as their priority. The queue manager 33 also manages outbound tasks such as carrying out promotions to target pre-sampled
10 customers, by registering the tasks one by one as delayed queues. With this type of outbound task, in response to a queue acquisition request from a client, the queue with the highest priority, based upon the request content, is selected, and this queue is returned to the client. The
15 client processes the acquired queue. If there is a queue deletion request after the client has completed processing of the delayed queue managed by the queue manager 33, the corresponding delayed queue is deleted. If a callback is necessary, a callback queue is registered.

20 The queue manager 33 monitors the delayed queues that it manages, and when there is a delayed queue that satisfies a set of parameters, it notifies the dispatcher 32 of this fact. For example, if there is a delayed queue for which a set length of time has passed since it was registered, or if
25 there is a queue acquisition request from a client and there

is a delayed queue registration that satisfies the requested parameters, a queue that matches those parameters is selected and returned to the client. When there are from a client such requests as a queue list request, a change request, or a deletion request, a corresponding delayed queue data list is sent to the client, and changes or deletions of the delayed queue data are performed.

Queue Registration Request

Requests that can be responded to automatically in a channel are processed in the channel. For example, a telephone call arriving through a public line is automatically allocated to the REP system 14 or the VRU 15 by an ACD system within the PBX 11, and either the operator handling the REP 14 responds or the VRU 15 performs an automatic response process. In the event of requests for which it appears that response by an operator or the VRU 15 would be insufficient, a queue registration request is sent to the servers via the queue controller DLL 24.

For response to inquiries that are sent to the Web server 12 or to e-mail sent to the e-mail server 13, the Web agent system 16 or the e-mail agent system 17, respectively, sends a queue registration request to the servers via the queue controller DLL 24.

Thus when a process request is arises in the channels,
a queue registration request process is executed, according
to a flowchart as shown in Fig. 3.

In step S11, when the queue controller DLL 24 has
5 determined that the received request cannot be processed by
a client, it makes a queue registration request to the
dispatcher 32 of the BC controller server 31. Then the
queue controller DLL 24 creates queue data corresponding to
the request, and sends this to the dispatcher 32.

10 The queue data constitutes a table such as is shown in
Fig. 10, provided with items including Channel Type, Queue
category, In/Out Classification, User ID, Campaign ID,
Customer ID, History Key, Start Time and Date, Completion
Time and Date, Queue ID, Area Code, Household Name
15 Identifying Number, and Individual Name Identifying Number.

Channel classes include, for example as set forth by
numerical value in the channel identification list of Fig.
11: REPs, which are operator terminals; Web agents; e-mail
agents; CRM (Customer Relationship Management) agents;
20 supervisors, who manage the operators; and segment analysis,
which extracts customers targeted for outbound tasks. When
the number of channel classes needs to be expanded, this
channel identification list may be modified as needed.

Queue categories include, for example as shown in the
25 queue category list of Fig. 12 according to numerical value:

Effective Callbacks, which are callbacks to customers that are to be made based on the results of an earlier telephone conversation with the client; No Answer Callbacks, which are callbacks to customers who were not in or whose lines were busy; Follow-Up Calls, which follow up on previous calls; Campaigns, which are outbound tasks performed by telephone; Web Forwarding, which are requests for callbacks to the Web server; e-mail Forwarding, which are responses to e-mail; e-mail Transmission (Individual), which is transmission of individual items of e-mail; e-mail Transmission (DM), which is for direct mailings, and Telephone Call Forwarding, which forwards calls to the most appropriate operator. These queue categories may be modified as needed, based on changes in channel classes and changes in the system.

The in/out category indicates whether a queue is an inbound task or an outbound task. The user ID is an identification number for the operator or terminal handling the queue. The campaign ID and the customer ID can be identified from such sources as the customer data input from the operator terminal when an operator answers a phone call, the ID number that a customer has input on a Web site, and the mail address contained in the e-mail. In the case of outbound tasks, data is input on customers that are selected when a promotion is being planned.

shown in Fig. 13, if the queue category is "No Answer
Callback," "Campaign," "E-mail Sending (DM)", the queue is a
task request queue. If the queue category is "Effective
Callback," "Follow-up Conversation," "E-mail Forwarding," or
5 "E-mail Sending (Individual)," the queue is a delayed
notification queue. If the queue category is "Web
Forwarding," "Telephone Forwarding," the queue is the real-
time notification queue. Allotment into real-time process
requests or non-real-time process requests is in accordance
10 with the services set in the queue categories; settings for
real-time process requests and non-real-time process
requests can be made flexibly.

The real-time notification queue is a process request
requiring real-time processing. The real-time queue is
15 used, for example, for callback requests to the Web server
12 or for the forwarding of telephone calls that the REP 14
or the VRU 15 were unable to process.

The task request queue relates to outbound tasks, such
as no answer callbacks to customers who were not in or whose
20 lines were busy, campaigns that are outbound tasks performed
with the telephone, and e-mail transmission (DM) for direct
mailing. The task request queue is sent to clients
according to a queue acquisition request from the queue
controller DLL 24. The delayed notification queue is for
25 tasks such as: the effective callbacks, which are to

customers who require a callback based on the results of a previous call; telephone calls to follow up on previous calls; e-mail forwarding for responses to e-mail; and e-mail transmission (individual) for sending of individual e-mail.

5 The task request queue and delayed notification queue are delayed queues; when the dispatcher 32 receives these queue registration requests, it sends them to the queue manager 33, which performs registration and management. While delayed notification queues do not require real-time
10 processing, they are considered to require processing within a set time frame, with a response needed to a request from a customer. Therefore, after a predetermined time elapses following registration by the queue manager 33, a queue report is given to the dispatcher 32, and the dispatcher 32
15 performs the allocation.

In Step S12, if it is determined that the queue data for which there was a queue registration request is a real-time queue, control proceeds to Step S13. At Step S13, the allocation destination for the real-time notification queue
20 is selected.

The allocation of the real-time notification queues can be performed using an allocation table as shown in Fig. 14. This allocation table may, for example, be created for each operator, based on the queue data that each operator of the
25 REPS 14 is capable of handling. The table contains such

items as User ID, Campaign Code, Area Code, Importance,
Forwarding Group ID, In-effect Flag, and In/Out
Classification.

The user ID is the ID number of the operator. Campaign
5 codes, area codes and the like are established that are
associated with this user ID and that the operator can
handle. The system may be constituted so that an operator
handles a plurality of campaign codes or area codes,
depending upon the skill of the operator. Depending on
10 circumstances the system may also be constituted so that the
importance of an operator may be set. Also, allocation
information (entries) is divided into those for inbound
tasks and those for outbound tasks. The system may be
constituted so that when a call is received from a public
15 network, a multi-logon function of the ACD system provided
in the PBX 11 confirms the customer's campaign code, area
code and the like when the call is received, and
automatically allocates this call to an operator with a
matching campaign code or area code. The dispatcher 32
20 selects the most appropriate operator for real-time process
requests generated in the channels.

The dispatcher 32 compares the real-time notification
queue ID, area code, and in/out classification with the
real-time notification queue ID, area code, and in/out
25 classification of the operators, and selects an operator who

can handle this real-time notification queue. As a rule, an operator whose in/out classification matches and who has a matching campaign code is selected. When an area code is designated, particularized allocation in which area code is included is performed.

After the allocation destination is selected, in Step S14, when selecting the terminal to which a queue report is to be made, a decision is made based on the available status of the terminals, and the notification is sent. At this time, if there is no terminal open, a busy notification will be sent to the originator of the request, indicating that at present response is not possible, even if the request is a real-time process request. If the request is a non-real-time process request, then the request is returned to the queue manager, and is processed again during the next reporting process.

Receiving a queue reporting process from the dispatcher 32, on the client end, in Step S15, a queue incoming signal process is carried out. Herein queue data sent from a server is acquired and response is made to the real-time reporting queue. This actually means that an operator makes a telephone response or e-mail response.

When real-time notification queue handling is possible in channels other than those REPs handled by operators, terminals for such channels are selected, real-time

notification queue are sent thereto, where processing is performed. Modifications may be made as needed as the channels are expanded.

In Step S12, a routine is carried out for registering
5 as delayed queues on the queue manager 33 process requests
which the dispatcher 32 has determined not to be real-time
queues. Herein the queue manager 33, in Step S16, registers
that process request as a delayed queue. The registration
of delayed queue requests may include an outbound task queue
10 being registered through the segment analysis channels;
therein, registration of the delayed queues as task request
queues is made.

In registering delayed queues, the registration
process priority level is assigned to each queue. The
15 priority level of each queue is established according to a
priority table, as shown in Fig. 15.

The queue priority table is made up of queue category,
task category, campaign code, queue creation date and time,
and allocation logic items.

20 Queue category is the queue class belonging to given
data, and is established by the queue categories shown in
Fig. 12. Task category indicates the form of contact with
the customer; as listed in Fig. 16 by numerical value, tasks
are classified for example into: Task Stop Status, CTI
25 Inbound, Potential Sales, CTI Outbound, Tele-banking, E-mail

Inbound, E-mail Outbound, Web, Common, and Other categories. These task categories may simply indicate inbound categories, or they may indicate whether the task is inbound or outbound.

5 The campaign code in the queue priority table can be acquired from the campaign ID in the queue data. For the queue generation date and time, which is for monitoring time elapsed since registration of queue data, the time of registration is established.

10 The allocation logic is the search logic applied to a queue. For example, allocation logic ID numbers are prepared beforehand for searching for requests for which a predetermined length of time has elapsed since the queue generation time; for searching for requests that have a
15 matching campaign code; for searching only for queues for outbound tasks; for searching for requests for callbacks; searching for requests with matching operator IDs; searching for requests with matching area codes; or searching through a combination of the above.

20 *Queue Acquisition Requests*

 When a delayed queue acquisition request has been made from the client end, a process is executed according to the flowchart shown in Fig. 4.

 Some conceivable cases in which a delayed queue
25 acquisition request would be made from the client end would

be in outbound tasks such as preplanned promotion-related tasks, and in delayed notification queue processing, wherein a queue for performing a next-customer process would be requested on the client end.

5 When a client that has become available and able to execute processing for a next customer requests next queue data, the client sends a queue acquisition request from the queue controller DLL 24 to the queue manager 33 (Step S21). The queue acquisition request sends the requested queue
10 category, campaign ID, in/out classification and operator user ID, as well as data requesting the next customer data.

 When the queue manager 33 receives the queue acquisition request from the client, it executes a queue acquisition process in Step S22. In the queue acquisition
15 process, the registered delayed queue is searched and queue data for the next customer is extracted, based on the queue categories, campaign IDs, in/out classifications, and area codes in the sent data.

 The queue manager 33 then sends to the client the next
20 customer queue data that has been extracted, which is identified by its user ID (Step S23). On the client end the process for the next customer is executed (Step S24) based on the sent queue data.

 This configuration may be such that in the queue
25 acquisition request of Step S21, the client sends only the

operator's user ID, and in Step S22 the queue manager 33 would extract the appropriate queue based on this user ID and send that queue data.

Queue List Request

5 When a client requests a queue list registered in the queue manager 33, processing is executed according to the flowchart shown in Fig. 5. Conceivable cases in which a client will make a queue list request include, for example, an operator wishing to see, from among the delayed queues
10 registered in the queue manager 33, a list of queues for which the queue category is "effective callback."

 When a client makes a queue list request, the queue controller DLL 24 sends the queue list request to the queue manager 33 (Step S31). Here, the sent data may include the
15 queue category, campaign ID, operator's user ID and the like for the queues for which a list was requested.

 The queue manager 33, having received the queue list request, creates a queue list based on the sent data (Step S32). For example, based on the queue category, campaign ID,
20 and user ID, it searches the registered delayed queues, extracts the queue data that matches the request from the client, and creates list data.

 The queue manager 33 sends the list data thus extracted and created to the client, which is identified by its user
25 ID (Step S33). The client, having received the sent list

data can execute a listing process by such means as displaying the list data as a list on a monitor (Step S34).

Queue Change Request

When a request is made to change queue data for a
5 delayed queue registered with the queue manager 33, a
routine is executed according to the flowchart shown in Fig.
6. Conceivable cases in which a queue change request would
be made include changing the time of a callback for those
queues among the delayed queues managed by the queue manager
10 33 that have "effective callback" as their queue category.

When a data change is carried out on the client end on
the delayed queues managed by the queue manager 33, as when
there has been a change in a scheduled callback (Step S41),
the queue change request is sent to the queue manager 33
15 (Step S42). The queue change request sends queue IDs and
user IDs, as well as data for making the change.

The queue manager 33, based on the sent data, extracts
queue data having the designated queue ID, and makes the
queue data reflect the data change.

20 A configuration is possible such that, if on the client
end the queue ID of the queue data to be changed cannot be
recognized, data on queue categories, area codes and start
times is sent, and the queue manager 33 is made to search
for the relevant queue data.

Queue Deletion Request

When a request is made to delete queue data in the delayed queues registered with the queue manager 33, a routine is executed according to the flowchart shown in Fig.

5 7. Conceivable cases in which a queue deletion request would be made include the deletion of queues from those under the management of the queue manager 33 because the processing of queues acquired from the queue manager 33 has been completed.

10 When a queue deletion request is made at a client, as when the next customer processing acquired from the queue manager 33 has been completed (Step S51), the queue deletion request is sent to the queue manager 33 (step S52). The queue deletion request is constituted so as to send such
15 data as the queue ID of the queue data, completion time and date, and the operator's user ID.

When the queue manager 33 receives the queue deletion request from a client, it executes queue deletion process (step S53). In the queue deletion process, queue data is
20 extracted based on the queue ID in the sent data, a process-completed flag is raised or some such similar step taken, and this queue data is deleted from the active delayed queues.

Parameter	Unit	Value	Standard Error	t-Statistic	p-Value
Intercept		1.2345	0.1234	10.00	0.0000
Age	Years	0.0567	0.0089	6.37	0.0000
Gender	Male/Female	0.1234	0.0456	2.70	0.0089
Education	Years	0.0234	0.0034	6.88	0.0000
Income	\$/Year	0.0012	0.0002	5.67	0.0000
Health	Good/Bad	0.3456	0.0789	4.38	0.0000
Marital Status	Married/Single	0.2345	0.0567	4.13	0.0000
Religion	Protestant/Catholic	0.1567	0.0345	4.54	0.0000
Region	North/South	0.0890	0.0123	7.23	0.0000
Time	Years	0.0045	0.0007	6.67	0.0000
Constant		1.2345	0.1234	10.00	0.0000

5

15

Delayed Queue Reporting Process

20

09247293 44300

Delayed queues for which the queue category is follow-up call, e-mail forwarding, and e-mail transmission (individual) do not require real-time processing; however, because they involve response to customers, they should be processed relatively quickly. The delayed queue reporting process is executed in cases where the scheduled time and date of a delayed notification queue have arrived, such as when the queue category is "effective callback," and in cases where a predetermined length of time has passed since delayed queue reporting registration, such as when the queue category is follow-up call, e-mail forwarding, or e-mail sending (individual).

This delayed queue reporting process will be explained using the flowchart of Fig. 9.

15 In Step S71, the queue manager 33 searches the registered delayed queues using allocation logic and extracts, for example, delayed notification queues for which a predetermined amount of time has passed since registration, or "effective callback" queues for which the scheduled date and time have arrived. Herein, searches of registered delayed queues are performed at periodic intervals, and when a corresponding item is found, control proceeds to Step S72.

20

In Step S72, the delayed notification queue extracted as a result of the search at Step S71 is sent to the

25

002227 2924260
dispatcher 32, and a delayed queue reporting request is made. At this point, such data of the extracted queue data as queue category, in/out classification, user ID, campaign ID, customer ID, start time, area code is sent to the
5 dispatcher 32.

In Step S73, the dispatcher 32 selects a queue reporting destination based on the sent data. The in/out classification, campaign ID, area code and the like is compared against the allocation table of each operator, and
10 the most appropriate operator is selected. For queues that have a valid ID, the operator with that user ID is selected. When the client current status managed by the BC-BUS 34 indicates that the selected client is busy, re-selection is executed. The system may be constituted so that in the
15 event that a plurality of operators is capable of processing this queue, the operator that has waited the longest to receive a signal is given notification of the queue.

When a queue reporting destination is identified in Step S73, a queue reporting process is executed in Step S74.
20 The queue reporting process executes the sending of queue reports via the BC-BUS 34 to the event transmission and reception unit 25 for the client corresponding the selected operator. Here, such information as the queue data's queue category, in/out classification, user ID, campaign ID,
25 customer ID, start time and date and area code is sent.

In Step S75 the client executes queue incoming signal process based on the sent data. For example, the system may be constituted so that the queue information that has arrived is displayed on a monitor, which prompts the operator to execute the process.

REP Screen Transitions Figure

Based on Fig. 17, explanation will be made of screen transitions on the REP 14 operated by an operator.

First, when the client application 22 is started up, a Logon screen 41 appears. The Logon screen 41 allows for selection of inbound task and outbound task as well as logging on. Normally, by selecting a task preset by the operator and logging on, the screen shifts to inbound system processing screens or outbound system processing screens.

The inbound system processing screens comprise a Queue Acquisition screen 42, an Awaiting Incoming Signal screen 43, and a Main screen 44. When callbacks or e-mail processes are executed, the Queue Acquisition screen 42 is used to make a queue acquisition request to the queue manager 33. When, during reception of a telephone calls, items in the "effective callback," follow-up call, and e-mail forwarding queue categories are processed, the queue acquisition request is carried out, and the queue is acquired from the queue manager 33.

configuration may be such that the time from termination of an operator process to the next queue allocation process is measured, and if more than a given time has elapsed, the queue is automatically acquired from the queue manager and
5 allocated to the operator terminal.

The outbound system processing screens comprise a queue acquisition screen 45, a awaiting incoming signal screen 46 and a main screen 47. When executing such processes as campaigns, callbacks and direct mail e-mail, the queue
10 acquisition screen 45 is used to make a queue acquisition request to the queue manager 33. When process request queues such as those for which the queue category is no answer callback, campaign, e-mail sending (DM), the queue acquisition request therefor is made, and the queue is
15 acquired from the queue manager 33.

In the event that among the delayed queues registered with the queue manager 33, none exists that corresponds to the queue acquisition request, the screen changes to the awaiting incoming signal screen 46. The awaiting incoming
20 signal screen 46 is constituted so as to give notification that a queue report sent from the BC controller server 31, or other such queue has arrived. When a queue has arrived, the screen changes to the main screen 47.

In the queue acquisition screen 45, too, if a request
25 queue corresponding to the queue acquisition request exists,

there is an appropriate queue report from the BC controller server 31, and the main screen 47 ensues.

The main screen 47 displays data pertaining to the queue, and by such means as starting up the required application, displays a screen corresponding to the relevant process. When the process is completed and the next customer queue is to be acquired, the queue acquisition screen 45 ensues from the main screen 47, and queue acquisition is performed. When the operator logs off the main screen 47, the processes on the main screen 47 are completed and the Logon screen 41 ensues.

Working Model

As an illustration of how the system actually operates, an explanation will be given of an example of the actions at a call center performing response by phone and e-mail, using the structural diagram Fig. 18.

In the configuration herein, a PBX 51 connected to a public network and an e-mail server 52 are provided, the PBX 51 being connected to the three REPs 53, 54 and 55 and to one VRU 56, and the e-mail server 52 being connected to one e-mail agent 57. The REPs 53, 54 and 55, the VRU 56 and the e-mail agent 57 are connected to the MCICD 58, and queues based on received signals and promotions are controlled by the MCICD 58 and allocated to the various channels.

09747262 112200

The first REP 53 and the second REP 54 are in charge of inbound telephone processing and e-mail processing. The third REP 55 is in charge of outbound telephone processing and e-mail processing. Inbound telephone calls are first
5 responded to by the VRU 56; those that cannot be answered automatically are responded to by the first REP 53 or the second REP 54, under the control of the MCICD 58.

The VRU 56 responds with automatic answering to telephone calls that arrive via a public network, and as
10 needed makes a queue registration request, as shown in Fig. 3. The queue registration request in this instance is a real-time queue. The e-mail agent 57 makes a queue registration request such that e-mail that has arrived at the e-mail server 52 is registered as a delayed queue.
15 Also, in accordance with pre-planned promotions and other outbound lists, the request queue is registered at the MCICD 58.

At a predetermined interval (e.g., one-minute intervals) the e-mail agent 57 performs acquisition of e-
20 mail that has arrived at the e-mail server 52; if e-mail has arrived, the e-mail agent 57 performs queue registration at the MCICD 58.

Using the current status sent by the REPs 53, 54, and 55, the MCICD 58 can monitor the statuses of the REPs 53,
25 54, and 55; if there is an e-mail arrival queue, it selects

0022T 2924760
a REP with available status and periodically attempts the queue reporting process.

The VRU 56 responds by giving a temporary answer over the phone; in the event that it determines that a call
5 should be forwarded to a REP, it makes a queue registration request to the MCICD 58. When the MCICD 58 determines that there has been a queue registration request from the VRU 56 and that this requires real-time processing, it immediately sends out a queue report to a REP capable of handling the
10 response.

Queues generated by e-mail are delayed queues with a priority lower than that of normal inbound telephone queues; in order to do the utmost to avoid being unable to process inbound telephone calls, the system is set up so that at
15 least one REP is always available. Therefore, e-mail queue reports are made so that at least one of the REP 53 and REP 54 that perform inbound processes is always available.

The third REP 55 performs a set proportion of outbound tasks and e-mail processes, based on such factors as
20 priority. If the backlog of e-mail delayed queues increases, the hold time for the queues lengthens, and their priority automatically rises. As mentioned earlier, the system can be constituted so that when a predetermined amount of time has elapsed since the registration of a delayed queue
25 managed by the queue manager in the MCICD 58, delayed queue

reports are given priority, thereby performing the backlog of e-mail processes before outbound tasks such as campaigns. When inbound telephone calls have increased, there is the possibility that the REP 53 and REP 54 cannot perform e-mail processes and the backlog of e-mail delayed queues will increase; in such a case the REP 55, which is in charge of outbound tasks, can be made to give priority to processing the e-mail queues, thus helping to reduce the backlog.

No restrictions are placed herein on the configurations of the REP, VRU, e-mail agent and other channels. It is also possible to mix in REPs who handle both inbound tasks and outbound tasks. In such an instance, it is preferable to set up the system so that at least one REP is available to handle inbound tasks.

Urgent Mail

The system may be configured so that certain e-mails from among those e-mails for which the e-mail agent 57 has made a registration request are processed by priority, according to their content. For example, if the sender of an e-mail that has arrived at the e-mail server 13 is a specific, pre-registered mail address, the e-mail is sent to the REP 14 for priority processing, and the operator is made to carry the process out.

For example, the mail address of a priority customer is registered in advance. When a queue registration request

performing queue reporting control, more efficient processing is achieved.

The allocation logic allocates the process requests to the processing terminals. By modification thereof, system
5 modifications making for channel expansion can be handled easily, thereby providing a system with good expandability.

While only selected embodiments have been chosen to illustrate the present invention, to those skilled in the art it will be apparent from this disclosure that various
10 changes and modifications can be made herein without departing from the scope of the invention as defined in the appended claims. Furthermore, the foregoing description of the embodiments according to the present invention is provided for illustration only, and not for the purpose of
15 limiting the invention as defined by the appended claims and their equivalents.

What is claimed is:

1 1. A multi-channel processing control device

2 comprising:

3 process request determination means for determining
4 whether process requests from a plurality of channels are
5 real-time process requests needing processing in real-time,
6 or non-real-time process requests not needing processing in
7 real-time;

8 real-time processing allocation means for allocating
9 process requests determined to be real-time process requests
10 to processing terminals currently open among channels
11 capable of said real-time process;

12 non-real-time processing administrating means for
13 administrating process requests determined to be said non-
14 real-time process requests, as well as priority levels
15 therefor; and

16 non-real-time processing allocation means for
17 allocating non-real-time processes administrated by said
18 non-real-time processing administrating means to any of the
19 processing terminals, said allocation performed with
20 consideration given to the priority level and to suitability
21 of the terminal for handling the process.

22 2. A multi-channel processing control method

23 comprising:

24 a step for determining whether process requests
25 generated from a plurality of channels are real-time process
26 requests needing processing in real-time, or non-real-time
27 process requests not needing processing in real-time;

28 a step, wherein said process request is determined to
29 be a real-time process request, for allocating those real-
30 time process requests to processing terminals currently open
31 among channels capable of said real-time process; and

32 a step, wherein said process request is determined to
33 be a non-real-time process request, for administrating said
34 non-real-time process request as well as a priority level
35 therefor.

36 3. A multi-channel processing control method as set
37 forth in claim 2, further comprising a step for allocating a
38 non-real-time process request currently being administrated
39 to the most appropriate processing terminal, based on the
40 priority level of the request and suitability of open
41 processing terminals capable of processing said non-real-
42 time process request.

43 4. For processing terminals handled by operators
44 processing incoming tasks and processing terminals handled
45 by operators processing outgoing tasks, at least one of the
46 operators being a dual-duty operator capable of processing
47 either incoming tasks or outgoing tasks, a multi-channel
48 processing control method wherein

49 the processing terminal handled by said dual-duty
50 operator is allocated to either incoming tasks or outgoing
51 tasks based on the current status of the processing
52 terminals handled by the operators.

53 5. A multi-channel processing control method as set
54 forth in claim 4, wherein among the processing terminals
55 handled by said operators, at least one processing terminal
56 is kept open for real-time incoming tasks.

57 6. A multi-channel processing control method as set
58 forth in either claim 4 or claim 5, wherein said incoming
59 tasks and outgoing tasks include process requests arising
60 from channels including, in addition to the processing
61 terminals handled by said operators, Web agents handling
62 process requests generated by Internet web servers, e-mail
63 agents handling process requests generated by e-mail
64 servers, and automatic voice response devices automatically
65 processing incoming signals from public lines.

66 7. A multi-channel processing control method as set
67 forth in any of claims 4 through 6, wherein said outgoing
68 tasks include pre-planned non-real-time process requests not
69 requiring real-time processing.

70 8. A recording medium on which is recorded a program
71 for the multi-channel control method set forth in either
72 claim 2 or claim 3.

73 9. A transmission medium transmitting a program for the
74 multi-channel control method set forth in either claim 2 or
75 claim 3.

76 10. A recording medium on which is recorded a program
77 for the multi-channel control method recited in any of
78 claims 4 through 7.

79 11. A transmission medium transmitting a program for
80 the multi-channel control method recited in any of Claims 4
81 through 7.

ABSTRACT

Multi-channel processing control device and method that efficiently performs enhanced customer service geared to the channel and service characteristics, and that can be readily modified to suit future expansion. A process request generated at a BC controller client (21) is sent as a queue registration request to a dispatcher (32) of a BC controller server (31) via a queue controller DLL (24). In the event of a queue requiring real-time processing, an event transmission and reception unit (25) of the most appropriate client is notified via a BC-BUS (34). A queue not requiring real-time processing is registered at a queue manager (33), where it is managed.

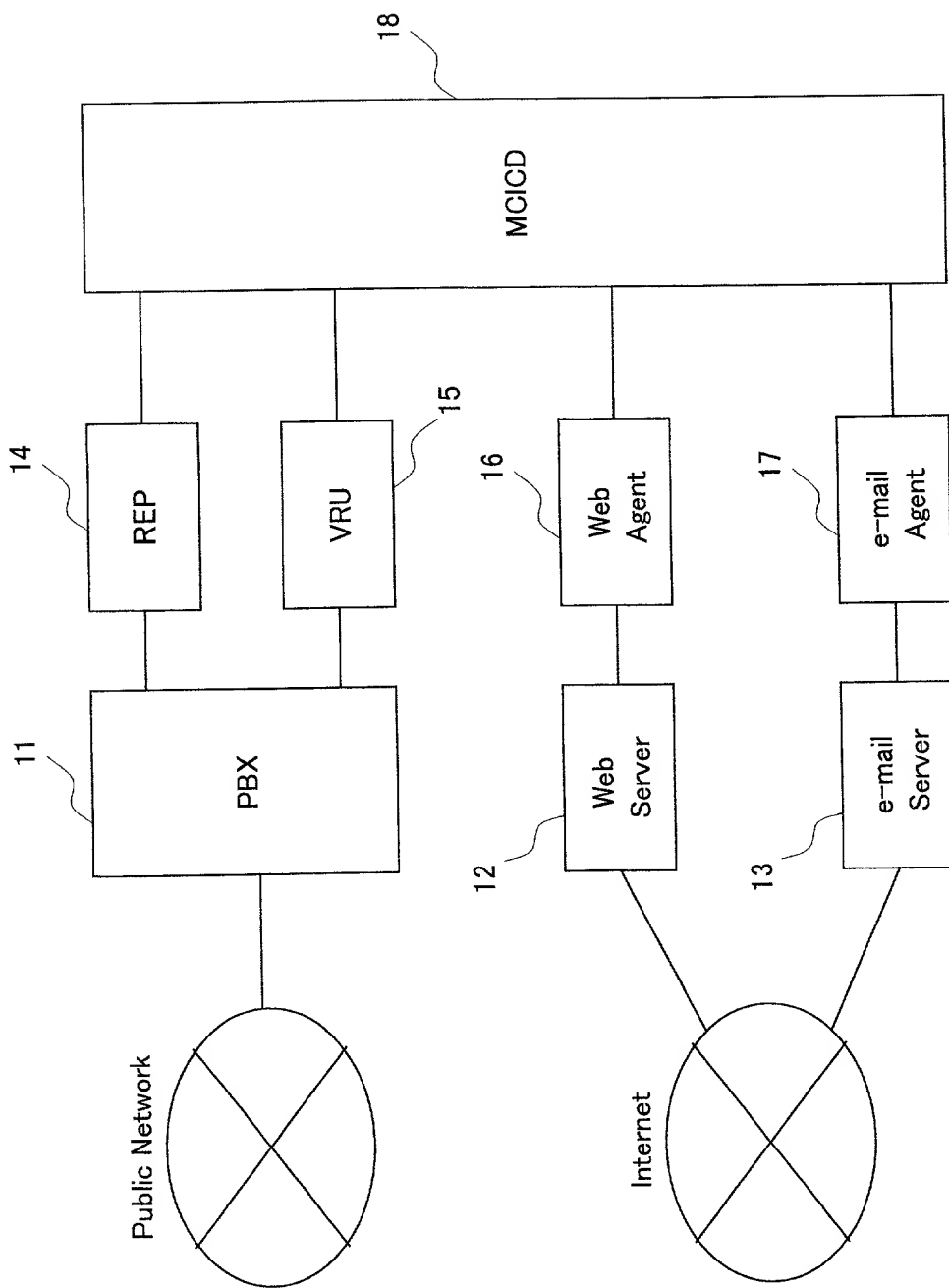


Fig.1

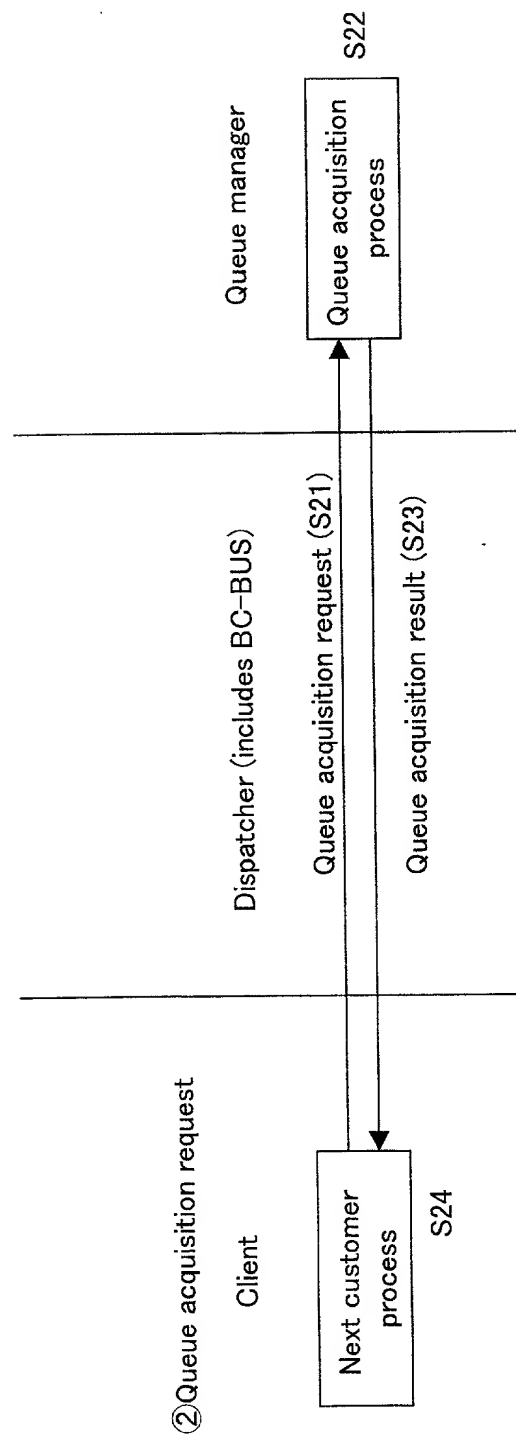


Fig.4

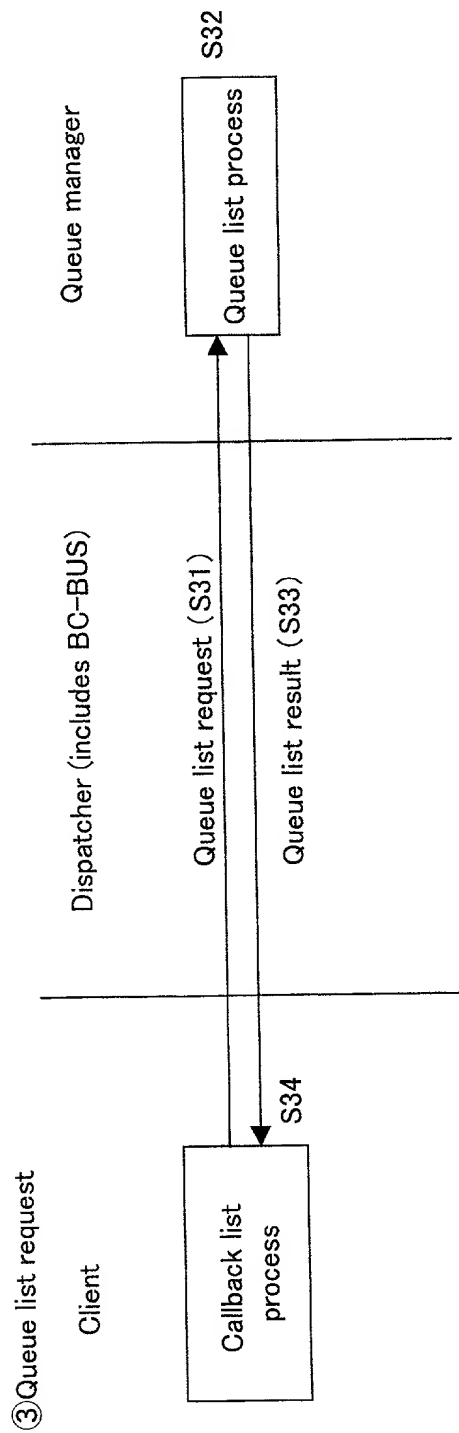


Fig.5

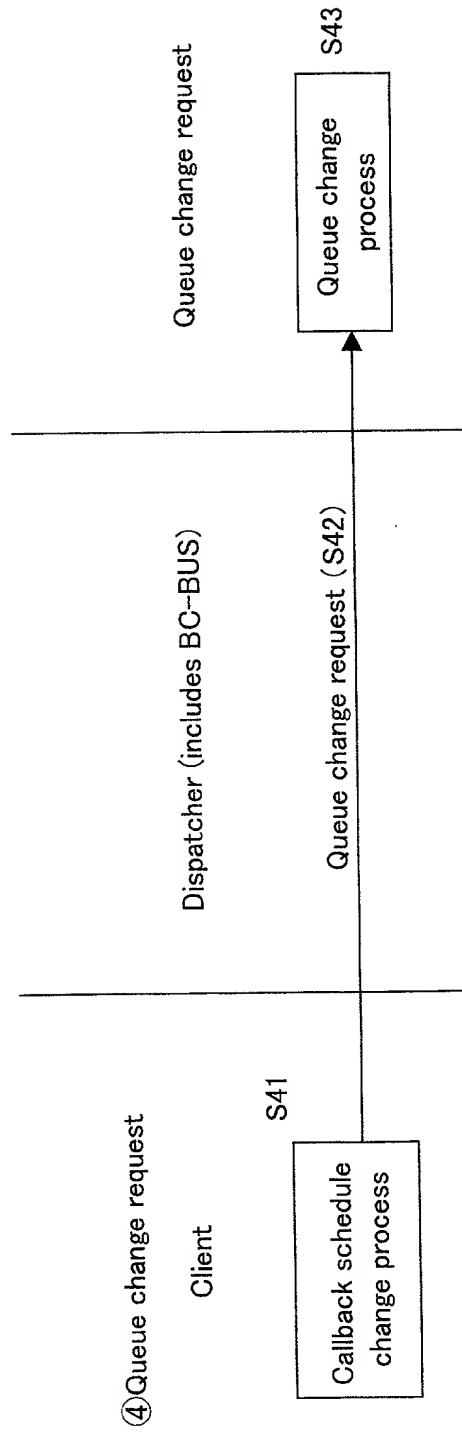


Fig.6

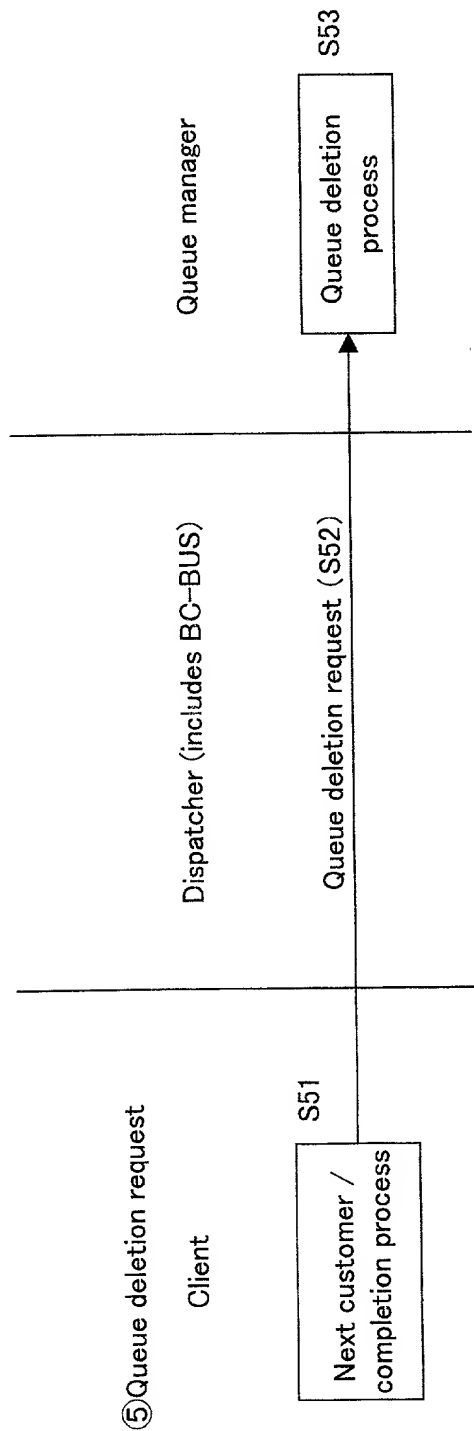


Fig.7

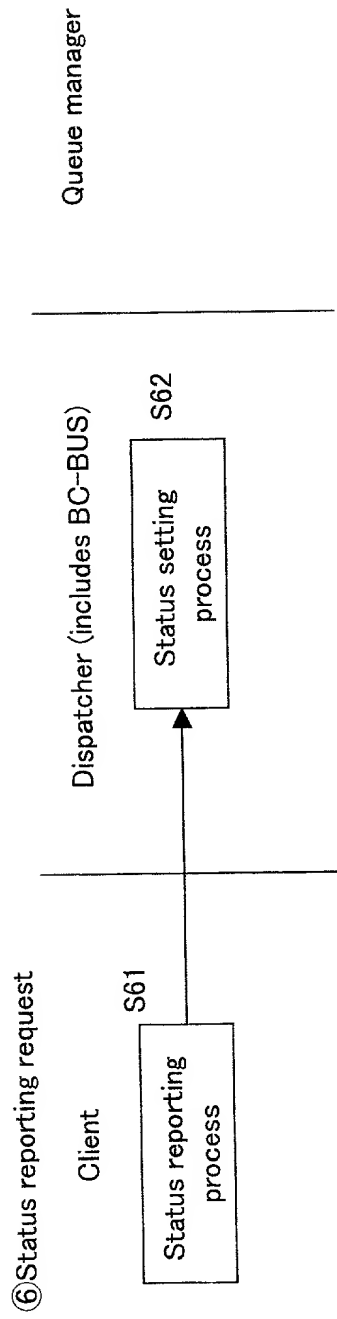


Fig.8

Channel Classification	
Queue Category	
In/out Category	
User ID	
Campaign ID	
Customer ID	
History Key	
Start Date, Time	
End Date, Time	
Queue ID	
Area Code	
Household Name Identifying Number	
Individual Name Identifying Number	

Fig.10

Channel Identification	Channel ID Name
1	REP
2	Web
3	E-mail
4	CRM
6	Supervisor
7	Segment analysis

Fig.11

User ID
Campaign code
Area code
Importance
Forwarding group ID
In-effect flag
In/out classification

Fig. 14

Queue Category
Task Category
Campaign Code
Queue Creation Time And Date (for computing hold time)
Allocation Logic Number

Fig.15

Task Category	Category Name
0	Task Stop Parameter
10	CTI Inbound
11	Potential Sales
20	CTI Outbound
30	Tele-banking
40	e-mail Inbound
41	e-mail Outbound
50	Web
98	Common
99	Other

Fig.16

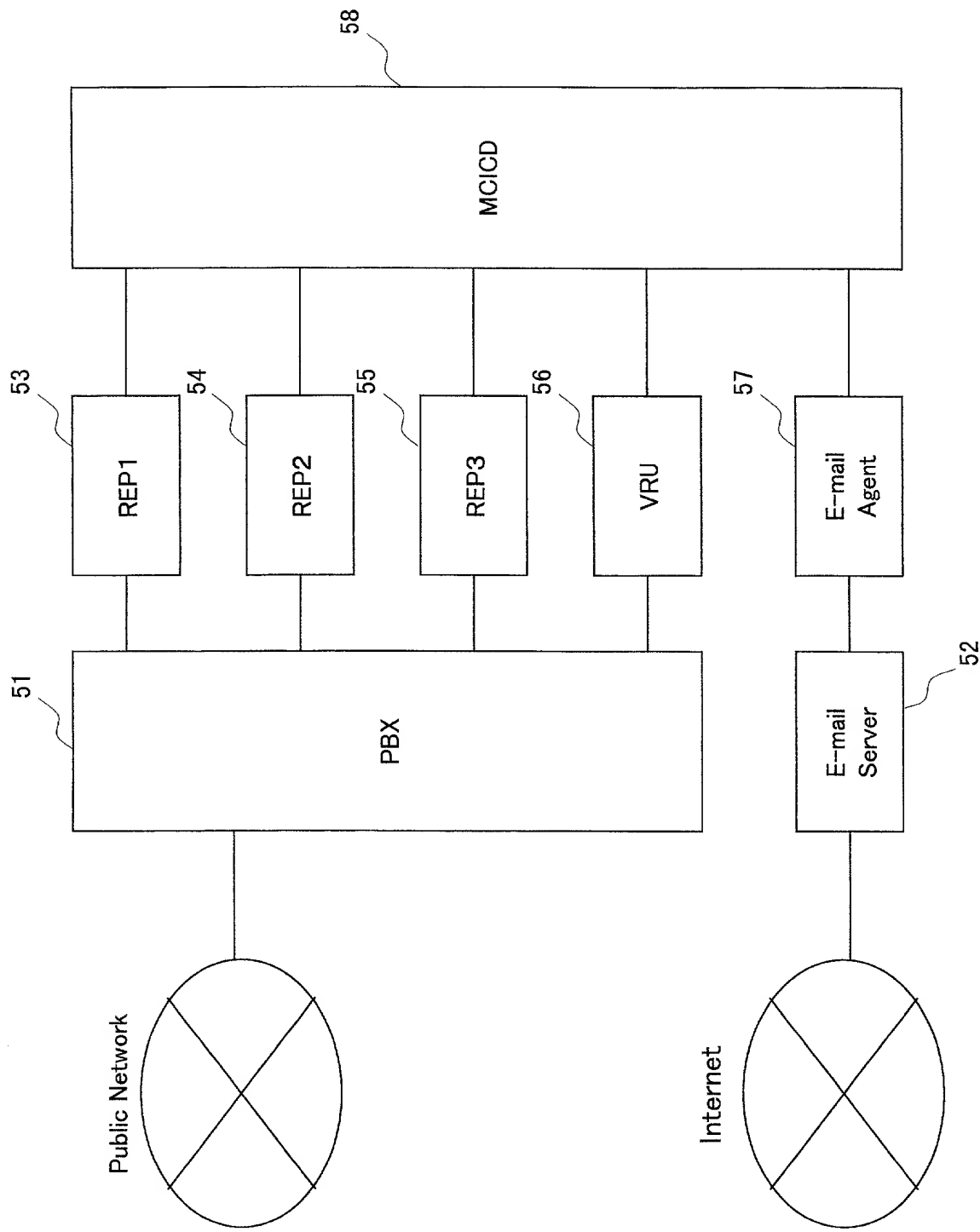


Fig.18

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Declaration and Power of Attorney For Patent Application

特許出願宣言書及び委任状

Japanese Language Declaration

日本語宣言書

下記の氏名の発明者として、私は以下の通り宣言します。

As a below named inventor, I hereby declare that:

私の住所、私書箱、国籍は下記の私の氏名の後に記載された通りです。

My residence, post office address and citizenship are as stated next to my name.

下記の名称の発明に関して請求範囲に記載され、特許出願している発明内容について、私が最初かつ唯一の発明者（下記の氏名が一つの場合）もしくは最初かつ共同発明者であると（下記の名称が複数の場合）信じています。

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

MULTI-CHANNEL PROCESSING CONTROL

DEVICE AND MULTI-CHANNEL PROCESSING

CONTROL METHOD

上記発明の明細書（下記の欄でx印がついていない場合は、本書に添付）は、

the specification of which is attached hereto unless the following box is checked:

☐ 月 日 に提出され、米国出願番号または特許協定条約
国際出願番号を _____ とし、
(該当する場合) _____ に訂正されました。

☐ was filed on _____
as United States Application Number or
PCT International Application Number
_____ and was amended on
_____ (if applicable).

私は、特許請求範囲を含む上記訂正後の明細書を検討し、
内容を理解していることをここに表明します。

I hereby state that I have reviewed and understand the contents of
the above identified specification, including the claims, as
amended by any amendment referred to above.

私は、連邦規則法典第37編第1条56項に定義されると
おり、特許資格の有無について重要な情報を開示する義務が
あることを認めます。

I acknowledge the duty to disclose information which is material to
patentability as defined in Title 37, Code of Federal Regulations,
Section 1.56.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Japanese Language Declaration (日本語宣言書)

私は、米国法典第35編119条(a)-(d)項又は365条(b)項に基づき下記の、米国外の国の少なくとも一カ国を指定している特許協力条約365(a)項に基づく国際出願、又は外国での特許出願もしくは発明者証の出願についての外国優先権をここに主張するとともに、優先権を主張している、本出願の前に出願された特許または発明者証の外国出願を以下に、枠内をマークすることで、示しています。

Prior Foreign Application(s)

外国での先行出願
2000-093114

(Number)
(番号)

Japan

(Country)
(国名)

30/03/00

(Day/Month/Year Filed)
(出願年月日)

Priority Not Claimed

優先権主張なし

☐

(Number)
(番号)

(Country)
(国名)

(Day/Month/Year Filed)
(出願年月日)

☐

私は、第35編米国法典119条(e)項に基づいて下記の米国外特許出願規定に記載された権利をここに主張いたします。

(Application No.)
(出願番号)

(Filing Date)
(出願日)

(Application No.)
(出願番号)

(Filing Date)
(出願日)

私は、下記の米国法典第35編120条に基づいて下記の米国外特許出願に記載された権利、又は米国を指定している特許協力条約365条(c)に基づき権利をここに主張します。また、本出願の各請求範囲の内容が米国法典第35編112条第1項又は特許協力条約で規定された方法で先行する米国外特許出願に開示されていない限り、その先行米国外特許出願提出日以降で本出願書の日本国内または特許協力条約国際提出日までの期間中に入手された、連邦規則法典第37編1条56項で定義された特許資格の有無に関する重要な情報について開示義務があることを認識しています。

(Application No.)
(出願番号)

(Filing Date)
(出願日)

I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s), or 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of Title 35, United States Code Section 112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of application.

(Status: Patented, Pending, Abandoned)
(現況: 特許許可済、係属中、放棄済)

(Application No.)
(出願番号)

(Filing Date)
(出願日)

(Status: Patented, Pending, Abandoned)
(現況: 特許許可済、係属中、放棄済)

私は、私自身の知識に基づいて本宣言書中で私が行なう表明が真実であり、かつ私の入手した情報と私の信じることに基づく表明が全て真実であると信じていること、さらに故意になされた虚偽の表明及びそれと同等の行為は米国法典第18編第1001条に基づき、罰金または拘禁、もしくはその両方により処罰されること、そしてそのような故意による虚偽の表明を行なえば、出願した、又は既に許可された特許の有効性が失われることを認識し、よってここに上記のごとく宣誓を致します。

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Japanese Language Declaration (日本語宣言書)

委任状: 私は下記の発明者として、本出願に関する一切の手続きを米特許商標局に対して遂行する弁理士または代理人として、下記の者を指名いたします。(弁理士、または代理人の氏名及び登録番号を明記のこと)

James D. Halsey, Jr., 22,729; Harry John Staas, 22,010; David M. Pitcher, 25,908; John C. Garvey, 28,607; J. Randall Beckers, 30,358; William F. Herbert, 31,024; Richard A. Gollhofer, 31,106; Mark J. Henry, 36,162; Gene M. Garner II, 34,172; Michael D. Stein, 37,240; Paul I. Kravetz, 35,230; Gerald P. Joyce, III, 37,648; Todd E. Marlette, 35,269; Harlan B. Williams, Jr., 34,756; George N. Stevens, 36,938; Michael C. Soldner, 41,455; Norman L. Ourada, 41,235; Kevin R. Spivak, P-43,148; and William M. Schertler, 35,348 (agent)

書類送付先

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith (*list name and registration number*)

Send Correspondence to:

STAAS & HALSEY
700 Eleventh Street, N.W.
Suite 500
Washington, D.C. 20001

直接電話連絡先: (名前及び電話番号)

Direct Telephone Calls to: (name and telephone number)

STAAS & HALSEY
(202) 434-1500

唯一または第一発明者名	Full name of sole or first inventor <u>Takashi Shimada</u>
発明者の署名	Inventor's signature <u>Takashi Shimada</u>
日付	Date <u>November 17, 2000</u>
住所	Residence <u>c/o FUJITSU LIMITED Kawasaki, Japan</u>
国籍	Citizenship <u>Japan</u>
私書箱	Post Office Address <u>c/o FUJITSU LIMITED</u>
<u>1-1, Kamikodanaka 4-chome, Nakahara-ku, Kawasaki-shi, Kanagawa 211-8588, Japan</u>	
第二共同発明者	Full name of second joint inventor, if any <u>Yasunori Naruse</u>
第二共同発明者	Second inventor's signature <u>Yasunori Naruse</u>
日付	Date <u>November 17, 2000</u>
住所	Residence <u>c/o FUJITSU LIMITED Kawasaki, Japan</u>
国籍	Citizenship <u>Japan</u>
私書箱	Post Office Address <u>c/o FUJITSU LIMITED</u>
<u>1-1, Kamikodanaka 4-chome, Nakahara-ku, Kawasaki-shi, Kanagawa 211-8588, Japan</u>	

(第三以降の共同発明者についても同様に記載し、署名をすること)

(Supply similar information and signature for third and subsequent joint inventors.)